

FOR MASS CIRCULATION & READERSHIP IN THE PUBLIC HEALTH INTEREST

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TOBACCO USE

- HEALTH IMPLICATIONS (1)
- SOCIO-ECONOMIC IMPLICATIONS (33)
- QUESTIONS & ANSWERS (40)

&

STATEMENT OF WORLD MEDICAL ASSOCIATION
ON HEALTH HAZARDS OF TOBACCO PRODUCTS



AN ACTIVITY OF



NATIONAL INSTITUTE OF PRIMARY HEALTH CARE

AN ACTIVITY OF HEALTH CARE PROMOTION TRUST (Regd.)

A Voluntary Health Agency devoted to promotion of Primary Health Care

— EDUCATION, RESEARCH AND INFORMATION DISSEMINATION

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OUR APPEAL

We reproduce texts of our three publications in this booklet as our contribution in the national campaign against tobacco use.

The proceedings of a **WORKSHOP** organised by our Institute precedes the details on Socio-economic implications followed by a set of questions and answers highlighting the main points as a clear cut information is a concise form. This is followed by the Statement on Health Hazards of Tobacco Products by World Medical Association which sets the process of implementation of Action by the profession and the governments.

The Resolution adopted by the Workshop is comprehensive, concise and practical if only it is acted upon by all concerned. Our Institute humbly appeals to all to help our efforts through support to mass circulate this informative literature to the vulnerable groups, the social reformers, the teachers, the planners, the administrators and to those working for the welfare of mankind.

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HEALTH IMPLICATIONS OF TOBACCO USE

— A GROUP DISCUSSION

Suggestions and Recommendations

A—PREAMBLE

Tobacco smoking is something that not only affects the smoker medically and economically directly, but also induces costs affecting his family, other taxpayers and community at large. It is to be realized that smoking is a *community event*. It is irrespective of the social or educational status of an individual. Country's working capacity is reduced by smoking and thereby the GNP because of the following:

1. *Higher morbidity and absentee rate*: smokers have higher absenteeism due to higher acute morbidity.
2. *Higher disablement rates*: non-fatal chronic morbidity is higher, leading to disability.
3. *Higher demand for primary and hospital care*: the deleterious health consequences of smoking generate extra demand for primary medical care and also hospital care which when given and paid for are real costs to community and cannot be recovered.
4. *Higher premature mortality*: there is higher mortality before retirement age, affecting both—the family of the diseases as well as the community.

Cancer of the buccal cavity, pharynx, larynx and oesophagus have all been shown to be associated with smoking, with a risk factor estimated to be from 5 to 10 times that of non-smokers.

The estimated risk of developing cancer of the hard palate is 132 times greater in women who smoke *chuttas* reverse than in those who do not have this habit. *Chuttas* is smoked by women in Andhra Pradesh, India where cigarette or *biddi* is held with the smouldering end inside the mouth.

Smoking accounts for about 90% of deaths from lung cancer, 75% of deaths from chronic bronchitis and 25% of deaths from coronary heart disease in men under the age of 65 years.

Gastroduodenal ulcer occurs twice as frequently in smokers as in non-smokers, and cigarette smoking is the single most important adverse factor affecting the healing and relapse of duodenal and gastric ulcers.

Almost twice as many smokers as non-smokers give birth to babies

weighing less than 2000 grams or less by 10% of the normal weight. The under-weight babies have higher perinatal mortality and require specialised equipment and care for management.

If the parents smoke, the risk of an infant developing bronchitis or pneumonia in the first year of life is doubled.

An increased incidence of a smoking-related disease will lead to an increased demand for: (a) Medical and nursing services, (b) Hospital facilities, and (c) Pharmaceutical products.

A more comprehensive analysis of the economic consequences of cigarette smoking must consider the following factors:

- i. Costs related to the hypermorbidity, disablement and premature deaths caused by cigarette smoking.
- ii. The cost of research and health education on smoking.
- iii. Loss of family purchasing power due to expenditure on tobacco.
- iv. The resources employed in the production and sale of cigarettes.
- v. The transfer payments involved in the taxation of cigarettes;

The payment of taxes on cigarettes should be regarded neither as creating assets nor as a loss of assets. It is a transfer of money from smokers as a group to the government treasury.

- vi. Costs related to smoking-induced needs for more efficient ventilation and to the clearing up of ash and litter caused by smokers.
- vii. The cost of fires and accidents caused by smokers.

B—RECOMMENDATIONS

I. **Advice to patients** (a) Smokers have to be directly explained the relationship of tobacco and diseases and to direct effect on spouses and children who tend to succumb to diseases easily; (b) gradual withdrawal by one/two cigarettes/biris per day and when reached on 4-5 per day, the smoker be advised to totally stop. This would help him to break his habit and addiction; (c) smokers be advised to purposely chose non-smoking areas in public places when his presence is required; (d) he be warned of withdrawal symptoms which are temporary by themselves and which he can overcome with determination when he is convinced that he can prolong his life and make it Disease-Free.

II. **Community participation**: There should be organised community programmes to (a) educate people about harmful effects of tobacco chewing/smoking; (b) ensure involvement of community leaders, religious heads, public men in community health education programmes and distribution of suitably worded hand bills available at all possible places.

III. **Government responsibility**: steps be taken by the Government through suitable legislations to (a) ban sale of tobacco/products to the minors; (b) print statutory warnings in bold readable words on cigarettes/

biri packs and on pan masaalas etc.; (c) ban all advertisement of tobacco products totally; (d) ban sponsorship of matches, tournaments and sports/beauty contests and such functions etc by the tobacco industry, that give direct publicity and encouragement smoking; (e) reduce nicotine and tar contents of cigarettes/biris; (f) inflict a special levy on sales of cigarettes etc. and utilize this collection for information and education of the public about hazards of tobacco use; (g) reduce total area of land on which tobacco is cultivated; (h) stop smoking in government offices/functions, public places, trains, buses, aeroplanes, cinemas, theatres, auditoria, crowded rooms etc. etc. which are open to public places, otherwise; (i) utilize mass media TV, radio newspapers for public education about socio-economic and health implications of tobacco use; (j) utilize all public health centres/clinics/dispensaries/hospitals for educating people.

IV. Medical and allied profession should (a) acquaint itself about socio-economic and health implications of tobacco use, this information should be passed on to all patients who smoke; (b) for this to be effective as a message, they themselves must set an example by not smoking; (c) offer themselves for writing suitable handouts, write-ups or give health education lectures in schools/colleges/factories/establishments and at other public places and in the media; (d) must bring to the notice of the smokers of the harm they are inadvertently causing on non-smokers in office/work places but in particular to their spouses and children, thereby exposing them also to harmful effects and making them vulnerable to repeated bouts of illnesses, which are avoidable; (e) in particular the sociologists/social workers/psychologist/psychiatrists be involved in community therapy to minimise psychoemotional disturbance both among non-smokers and among smokers who wish to stop the habit.

C—RESOLUTION

The following Resolution was unanimously approved:

1. "That *controlling the smoking epidemic*" be regarded as a disciplinary programme and the govt. should mobilize the support of key groups within the country. The same-key groups include political and religious leaders, voluntary organisations, doctors, other health professionals and teachers.
2. "The *National Institute of Primary Health Care*" be named as the key group in the field of education and information dissemination along with *National Society for Tobacco and Health*—(Both Voluntary Health Agencies).
3. "That *Non-smoking*" should be regarded as the normal social behaviour and all actions which can promote the development of this attitude be encouraged and supported.
4. "That *Monitoring*" the national smoking problems and evaluating control activities should be seen as essential components in the design and development of all *Smoking Control Activities*.

5. "That *Public Information Programme*" be developed as a key factor in the smoking control activities which should be a mass communication approach aimed primarily at creating and intensifying awareness of the nature and magnitude of the smoking problems and creating an atmosphere in which education programmes can flourish.
 6. "That *Extensive use of mass media*" radio and T.V., is a pre-requisite in the Public Information Programme Process.
 7. "That *Public Education Programme* be developed for specific target groups; as formal education activities at schools colleges etc. and of those or occurring in certain situations (places of work, hospitals, health centres, youth clubs, sports clubs, women's organisations security forces etc.)"
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INAUGURAL ADDRESS

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India is the 3rd largest country in the world to produce Tobacco. It produces 44 crore kgs. of tobacco every year. Government of India earns Rs. 950 crore from revenues including Rs. 200 crore foreign exchange. In India about 60 per cent of the male population above the age of 15 years smokes and 50 per cent chew tobacco in various ways. Tobacco consumption in India is increasing by 2.1 per cent as compared to 1.1 per cent reduction in USA and UK. Twenty-five lakhs of people die prematurely due to tobacco related diseases every year in this world. In India the premature deaths are 9 lakhs. Health consequences of tobacco consumption or the diseases produced by tobacco are very many. Eighty to ninety per cent of all coughs called bronchitis and chronic bronchitis are due to tobacco. Some of the cases of asthma are produced by tobacco and it definitely gets aggravated by tobacco. Cancers of lung and throat are 8.6 times more amongst smokers than in non-smokers in India. Cancers of mouth and tongue are very prevalent in India and constitutes 50-70 per cent of all cancers. They are related to smokeless tobacco in 90 per cent of cases—tobacco chewing, eating of pan with tobacco etc. Cancer of lower end of food pipe is also due to tobacco habit—pan masalas etc. Heart diseases are twice as common in smokers, heart attacks are 3 times more common amongst smokers, and 2nd heart attacks are 6 times more common in smokers are compared to non-smokers in India. Smoking persons are more prone to get cancer of cervix. Smoking pregnant women have 7 times more still births than in non-smoking mothers. The infants born to them are of low weight, and if these children have smoking parents they get frequent attacks of cold, catarrh, bronchitis, pneumonia and asthma. They remain sickly.

Non smokers are in majority in India. They are forced to breathe polluted air sitting next to a smoker specially in a closed room. They and their children have a right in a democratic country like ours to breathe fresh neat and clean air. A wife of a smoker has three times more chance to get cancer of lungs. Their rights must be preserved.

Inspite of all that, tobacco consumption in India is increasing by 2.1 per cent yearly, and the major culprit is the International Tobacco Industry who is helping to spread this epidemic through their media of advertisements and other sales promotion activities.

Tobacco industries spend US dollars 250 crores every year for these activities. In USA 4 crore people have quit cigarette smoking, in UK 1 crore and in West Germany 0.75 crore. Mostly these are adult people. Hence tobacco industry is shifting its interest to women and children in developed countries and to the third world countries in particular. They have to have 25 lakhs new 'recruits' every year to smoke to keep up with their business.

The *bidis* in India contain tobacco which has high amount of tar, nicotine and carbon monoxide. The cigarettes produced in India also have a high amount of tar, nicotine and carbon monoxide in their tobacco as compared to cigarettes manufactured abroad. The so called king size filter tips of cigarettes have 1.5 times more tar, nicotine and carbon monoxide in their tobacco. Nicotine is addictive. It increases the heart rate, increases the blood pressure, and also increases load on the heart besides producing spasms and clots in the legs. Tar produces cancer and carbon monoxide robs body of oxygen from the blood. Even one puff of cigarette will increase pulse, blood pressure and reduce the temperature of skin, of arms and legs due to less blood circulating there.

The economic gains of Rs. 9.50 crores to the Government of India outweighs and outstrips the economic losses produced by tobacco (i) The mortality of 9 lakhs of Indians per year, (2) Morbidity produced by tobacco related diseases like cancers, heart diseases and above all chronic bronchitis need lot of money to treat them, (3) the absenteeism of these sick people from their work in industry, office etc., considerably reduces the population working capacity and hence reduction in GNP, (4) the fire produced by cigarette butts, (5) deforestation produced by mechanism of curling to produce tobacco for bidis etc.

The Government of India has not taken a strong and resolute action against tobacco consumption. In India 70 per cent of people live in villages and a vast majority are illiterate. The tragedy is that the vast population do not know the bad effects of tobacco. They have never been told, moreover the statutory warning on the cigarette packet is very mild and written in small letters. Bidis packet has no warning, other types of tobacco sold for chewing and eating have no warning. Even if they have warning, majority of population is illiterate.

I would venture to make the following :

A. Appeal to Government of India to :

(1) inform and educate the people of India about the health consequences of tobacco through mass media—radio and TV—by having frequent talks, discussions and small skits and serials in English, Hindi and various regional languages of our country.

(2) inform and educate people through primary health centres.

(3) introduce a paragraph about the bad effects of tobacco in the textbooks of school children so that each and every student is made aware of.

(4) stop smoking in Government offices especially the Central Secretariat, in airoplanes, railways, public transport, public places, and in schools and colleges.

B. We recommended to the Government of India to pass certain legislation in the Parliament.

Prohibition is neither practicable nor desirable. Total ban on tobacco advertisements and sales promotion activities of tobacco industry is no doubt ideal but because of various reasons partial ban is suggested.

(1) The size of hoardings should not be long and the glamour associated with advertisements should be removed.

(2) The matter of statutory warning should be more potent and written in big and bold letters.

(3) Besides cigarettes packets, bidis, pan masalas, and tobacco sold in other forms should also have statutory warning.

(4) Sponsorship of sports events, beauty contests, other social events, by tobacco industries should be banned.

(5) Like the sale of liquor, cigarettes, bidis, pan masalas, and tobacco in any other form should be through Government run shops, or there should be limited number of shops to sell tobacco products.

(6) Nicotine and tar contents of bidis and cigarettes should be reduced. Tar contents should not be more than 15 mg. and nicotine content nor more than 1 mg.

(7) Price of bidis, cigarettes and pan masalas should be increased, and atleast 1 per cent of total revenue collected should be spent on information and education of the public about the bad effects of cigarettes.

C (1) Secure help of other voluntary organisations, community leaders, religion leaders, public men, politicians, etc.

(2) Visit various schools and colleges to lecture to children and adolescents.

(3) Publish handbills, posters, etc. giving information about the health consequences of tobacco consumption and these may be distributed to the lay public. ☐

2. PHARMACOLOGY AND TOXICOLOGY OF TOBACCO SMOKE ★

"ALL THINGS ARE POISONS AND THERE IS NOTHING WITHOUT POISON; IT DEPENDS ONLY ON THE DOSE WHETHER THINGS ARE POISONOUS OR NOT."

Philippus Paracelsus—Swiss Physician (1493–1541)

For tobacco smoke, these words are true even today. At present, tobacco smoke is considered to be the commonest cause of preventable disease, disability and death in the world. Shockingly enough, *tobacco smoking is a self-induced and socially accepted drug-addiction*. Smoking is an epidemic growing at the rate of 2.1% per year, the total tobacco consumption has registered a 400% rise from 1971 to 1981.

TOBACCO SMOKE

Tobacco smoke contains more than 4000 known compounds. In tar alone, 1000 compounds have been detected.

The vapour that curls away from the burning ember is called 'side-stream' and differs in composition from the 'main-stream' which a smoker takes into his mouth. It takes only 7 seconds for the nicotine in the lungs to reach the brain compared with the 14 seconds it takes for blood to flow from arm to brain. Furthermore, the smoker gets a 'shot' of nicotine after each inhaled puff. *At 10 puffs per cigarette, the pack-a-day smoker gets more than 70,000 nicotine shots to his brain each year.* It is hardly surprising that cigarette smoking is so addictive.

Differential Effects of Acidic and Alkaline Tobacco Smoke:

There is a considerable body of evidence to indicate that different types of tobacco have very different effects on smokers.

Though the acidic smoke is less irritant than the alkaline smoke, nicotine from such a smoke can be absorbed to an appreciable extent only if it is taken into the lungs. When the smoke is alkaline nicotine may be absorbed from the mouth itself. Thus pipe and cigar smokers can obtain nicotine without inhaling.

It is obvious that to obtain the same degree of 'nicotine satisfaction' as in smoking a pipe or cigar, the smoker having an acid smoke would tend to encourage more prolonged and extensive contact with the mucus membranes of the mouth and respiratory tract, and to take the acid smoke into his lungs. Therefore, such smokers would suffer greater exposure to the 'carcinogenic' effects of the smoke than would be the case with pipe or cigar smokers.

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Toxic Substances in Tobacco Smoke and their Effects

The most important substances in the tobacco smoke are divided into the following four groups:

- A. Irritant Substances
- B. Known Cancer-Producing Substances—Carcinogens
- C. Carbon Monoxide And Other Gases
- D. Nicotine

A. Irritant Substances in Tobacco Smoke

These are responsible for the following effects:

- (a) immediate coughing,
- (b) narrowing of the bronchial tubes and increased airway resistance,
- (c) ciliostatic effect after trivial stimulation,
- (d) stimulation of bronchial glands to secrete excessive amounts of mucus,

The irritants include hydrocyanic acid, formaldehyde, acetaldehyde, ammonia and oxides of nitrogen. They have direct irritant effects on the mucous membrane of the mouth, nose, throat, trachea, bronchi, pharynx and oesophagus.

B. Cancer Producers (Carcinogens):

These are of three kinds:

1. *Complete carcinogens* which above certain dose levels by themselves give rise to cancer in experimental animals.
2. *Tumour initiators*, which bring about the first stage of the carcinogenic process.
3. *Tumour promoters*, which complete the process once it has been started but cannot themselves initiate it.

In practice it seems that some complete carcinogens have relatively strong initiating but weak promoting activity, while others are weak initiators but strong as promoters.

C. Carbon Monoxide and Other Gases

Carbon monoxide is a toxic gas which interferes with oxygen transport and utilization in the human body. Its build-up in blood stream may reduce oxygen available to myocardium and other tissues.

Carbon-monoxide (CO) in the tobacco smoke is formed mostly as a result of incomplete combustion of tobacco. The gas inhaled from a cigarette contains 1 to 5% of CO.

Air dilutes CO inhaled from a cigarette to a final concentration of about 400 parts per million which is significant because CO has an affinity for haemoglobin about 200 times higher than oxygen. In heavy smokers, 15%

of the haemoglobin may be in the inactive form carboxy-haemoglobin. In normal people at rest, this is of little significance. However, in patients with angina, low concentrations of 50 parts per million of CO in inhaled smoke can cut down their exercise capacity.

CO can also increase the permeability of blood vessels to cholesterol. It has been reported that the combination of effects produced by nicotine and carbonmonoxide could and does precipitate sudden death and myocardial infarction in cigarette-smokers with a compromised coronary circulation.

In the non-smokers and 'passive smokers' the COHb levels do not exceed 2.5% and most are much lower. In active smokers, the COHb levels may go up to 13% or more.

The CO yield from a typical cigarette increases from around 2% CO at the first puff to around 6% in the final one.

The COHb level tend to fall throughout the day. Smoking and inhaling the smoke from one cigarette boost this level by about 1%. An interesting example of a smoker is cited who smoked 6 cigarettes while watching television during the evening. Due to a combination of chain smoking and inactivity, he went to bed with a COHb of 11.5%. The following morning his level had fallen to 4.7%.

D. Nicotine

It is extremely poisonous and is used as an insecticide, and can penetrate the skin or be inadvertently swallowed.

Pharmacological Effects of Nicotine

Nicotine is a potent drug and this can be realised from the fact that amount from one small cigar, when injected intravenously, would be enough to kill an adult man. A smoker may absorb up to 10% of this amount from a cigar over a period of about half an hour—resulting in inactivation of the drug by metabolism.

Nicotine can effect organ in the body. Injection of nicotine or inhalation of tobacco smoke diminishes tension in voluntary muscles and this may contribute to the feeling of relaxation experienced by smokers.

Smoking leads to secretion of antidiuretic hormone by the pituitary gland, causing a temporary reduction in urinary output. Nicotine stimulates the adrenal gland to release adrenaline and noradrenaline, leading to an increase in heart rate and blood pressure. The heart rate may go up by 20% after the first cigarette of the day.

Nicotine Dependence

The reasons people habitually smoke tobacco are certainly complex and it is no easy matter to reach a simple and reasonable conclusion concerning the mental health aspects of smoking. Social environment plays a large part in determining smoking.

Psychoanalysts have made a characteristic contribution to the problem. Getting something orally is the first great libidinous experience in life: first, the breast, then the bottle, then the comforter, then food and finally the cigarette.

Tobacco smokers have a feeling of satisfaction, expressed as either increased alertness or tranquility. Smokers who react by becoming alert tend to take a lower dose of nicotine than smokers who become more tranquil.

To sum up, it has been demonstrated that the intake of small quantities of nicotine (daily dose 0.002 mg/kg body weight in man) produce a reduction in the behavioural patterns associated with the aggressiveness, hostility, and irritability that were observed after the termination of extended periods of nicotine ingestion. It has been suggested that nicotine modifies mood in various ways and that nicotine (and perhaps its metabolite nicotine) is the reinforcing agent in tobacco smoking. There is support for the view that the chronic use of nicotine produces dependence and that, for some people, the disturbing nicotine withdrawal syndrome (anxiety, nervousness, fatigue, irritability) contributes to the difficulty in giving up smoking. □

3. PHARMACOLOGY AND TOXICOLOGY OF TOBACCO SMOKE ★

Nicotine is important in human biology for two reasons firstly for the primary reason why people consume tobacco products and secondly it may contribute to the causation of some tobacco related diseases.

There are differences in nicotine content among and within different strains of tobacco. On average, modern cigarette contain 8-9 mg. of nicotine. About four thousand compounds are generated by burning of tobacco. The smoke can be separated into gaseous and particulate phase. Among the components of the gaseous phase that produce nitrosamines etc. The particulate phase contains nicotine, water and tar. Tar consists primarily of poly cyclic aromatic hydrocarbons, some of which are documented carcinogens.

Pharmacokinetics and Metabolism

The absorption of nicotine biological membranes depends on PH. It is a weak base of pH of 7.9 Smoke from pipe and cigars is well absorbed through the mouth, there is little buccal absorption of nicotine from cigarette smoke, which is rapidly absorbed from alveoli of lungs.

Distribution and Elimination

Nicotine enters the brain quickly and then is distributed to other body

tissues and is extensively metabolised mainly in the liver and to a small extent in lung and kidney. Nicotine is also secreted in breast milk. The major metabolites are nicotine, nicotine-N-oxide.

Systemic Effects

Cardio vascular effects: There is increase in heart rate, blood pressure, cardiac stroke volume and coronary blood flow. In patients of coronary artery disease it may reduce left ventricular contractility and output and systemic veno-constriction, increased muscle blood flow. Smoking increases circulating concentration of nor-epinephrine.

Control Nervous System: Nicotine stimulates central nervous system, produces arousal as well as relaxation and EEG becomes desynchronized. There may be tremors, in large doses convulsions may occur, stimulation of respiration, nicotine causes vomiting by central and peripheral actions.

Neuromuscular: Tobacco smoking reduces muscular tone in spastic patients.

Gastrointestinal tract: Nicotine increases tone and motor activity of bowel—nausea, vomiting and diarrhoea.

Exocrine and Endocrine glands: Initial stimulation of salivary and bronchial secretion.

Cigarette smoking increases circulating levels of catecholamines, vasopressin, growth hormone, cortisol, ACTH, and endorphins. It is quite likely that endorphin release may be a reason for which people smoke especially in stressful situation. Nicotine inhibits the synthesis of prostacyclins which has platelet antiaggregatory and vasodilating actions.

Tolerance and physical dependence: Tolerance develops to some of the effects of nicotine mainly nausea and vomiting. The tolerance is due primarily to pharmacodynamic changes rather than alteration in drug disposition.

Cessation of the use of tobacco may be followed by withdrawal syndrome which varies from person to person. The symptoms include irritability, anxiety, restlessness, difficulty in concentrating, headache, increased appetite, insomnia. Use of buffered nicotine chewing gum helps in reducing the symptoms of withdrawal.

Drug interactions: Smokers metabolise a wide variety of drugs more rapidly than non smokers probably as result of induction of enzymes in the liver. Drugs affected are theophylline, warfarin, propranolol, imipramine, caffeine and anticoagulants. Smokers may require more relief from pain, may be less sedated by benzodiazepines and may obtain less antianginal effect from nifedipine, atenolol and propranolol.

Acute Toxicity: The fatal dose of nicotine for an adult is probably about 60 mg. of the base. Symptoms include nausea, salivation, pain in abdomen, vomiting, diarrhoea, headache and cardio-vascular collapse followed by terminal convulsions.

Therapy: Vomiting should be induced with syrup of Ipecac or gastric lavage should be performed with administration of activated charcoal into the stomach.

Chronic Toxicity: Nicotine plays a role in the pathogenesis of many smoke related diseases:

a) *Coronary and peripheral vascular disease:* Nicotine could contribute to athero-sclerotic disease by action on lipid metabolism, coagulation and haemodynamic effects. Nicotine increases myocardial oxygen consumption, coronary blood flow increases to meet the increased demand. In the presence of coronary artery disease ischaemia may develop.

b) *Cancer:* Nicotine is not in itself carcinogenic but is co-carcinogenic. It is nitrosated in tobacco smoke and nitrosamines are highly carcinogenic. Whether in humans they are formed in adequate amount to contribute to cancer is unknown.

c) *Chronic Lung disease:* Cigarette smoke is a major risk factor in development of emphysema and chronic bronchitis.

d) *Peptic Ulcer disease:* Smoking is strongly related to development of peptic ulcer disease. There is decrease in pancreatic flow and bicarbonate secretion leading to more prolonged acidity.

e) *Other diseases:* There is increased incidence of abortion, significant decrease in birth weight of children born to women who smoke during pregnancy and increased perinatal mortality.

f) *Toxic Amblyopia:* Due to nicotine has also been reported. □

4. SMOKING OR HEALTH: TOBACCO OR HEALTH*

Science has made it possible for modern man to establish cause and effect in his environment and in his life. However, the complex nature of man and his society may make it difficult for him to implement this knowledge. The existence of a double standard—one that is voiced and an opposing one that is practiced often adds to the confusion. Baha'u'llah the Prophet-Founder of the Baha'i Faith has said, "the development of the world, the training of nations, the tranquility of servants, and the security of the people of all lands have been due to the divine precepts and ordinance." Religion has always provided the guidelines for individual conduct, and all religions condemn the use of intoxicants and additives.

Fortunately the studies on the effects of tobacco are so wide-spread and conclusive that it is easy for man to realise that he is playing with not only his own but other peoples health as well when he continues the habit. King James I (1566-1625) said it well, "Smoking is loathsome to the eye, hateful to the nose, harmful to the brain and dangerous to the lungs." But he only gave part of the whole sordid picture. In India alone, more than 8 lacs die

every year because of the effects of tobacco and smoking, and it appears that it is going to become worse.

Those who smoke, do so for a large number of what they consider good reason. These may range from social acceptability to physical and emotional dependance. Perhaps what they do not realise is that they have a number of better reasons to give it up. Here are some!

Minor nuisances and Problems: These include headache, neuralgia, giddiness, tremors, halitosis, pigmentation of fingers and teeth, inflammation of the gums and loss of teeth premature.

Chronic Bronchitis: Most heavy cigarette smokers after the age of 45 years have a productive cough for most days for three month of the year. Technically they have chronic bronchitis, though most accept this as a penalty for their smoking. The 'Smoker's cough'. However the risk of hospitalisation for chronic bronchitis is four times as great and of death is six times greater in chronic smokers as compared non smokers.

Emphysema: The air cells in the lungs are distended, and adjacent walls are missing. Patients suffer from breathlessness wheezing and effort intolerance. Virtually all are chronic smokers. The irritative effect of cigarette smoke is considered to release proteolytic enzymes from the leukocytes, enough to overcome the body's defence mechanisms and lead to disease.

Chronic Obstructive Airways disease: This results from some combination of chronic bronchitis and emphysema. It is a major cause of disability. Appearance of chronic obstructive air disease and in as many as one third of the cases smoking has been incriminated as the cause.

Lung Cancer: This disease is directly related to the duration and number of cigarettes per day. The small cell anaplastic and the squamous cell types are more common whereas adenocarcinomas also occurred upto 9-14 times death rate in smokers as compared to non smokers. If a person has a 2% risk of getting lung cancer by the age of years, this increases to 11% if he smokes 11-20 cigarettes daily and to 23% if more than 20 cigarettes. Pipe smokers take a little longer than cigarette smokers to get lung cancer.

Ischaemic Heart Disease: This is indirect due to cholesterol being increased in smokers associated with a fall in high density lipoproteins. The direct action of Carbon monoxide measured as carboxy haemoglobin raised the risk of heart disease to 20 fold if the carboxy haemoglobin is more than 5%. Smokers under 55 years of age are four times more likely to get a heart attack. Myocardial infarction when it occurs in smokers is 5 times more likely to cause sudden death and is generally more severe. If after the first myocardial infarction the person continues to smoke he has a 17 fold risk of a recurrence or of developing angina. The risk is higher with increasing the number of cigarettes per day. Cigar and pipe smokers are also at risk though this is less than in cigarette smokers.

Cerebro-Vascular Accidents: The incidence of cerebral thrombosis is higher in smokers. Peripheral vascular disease also occurs more commonly.

Thrombo Angitis Obliterans: This occurs in young males. Only in smokers, especially bidi smokers. It is associated with obliteration of the small arterioles and gangrene. The disease is progressive. Stopping smoking altogether does not reverse it, however its progress may be halted.

Paptic Ulcer: Gastric ulcer occurs in association with smoking. 11.9% of smokers on endoscopy had a gastric ulcer.

Accidents: Smokers had as much as 50% more accidents and 46% more traffic violations. The act of smoking may also predispose to an accident as it takes attention away from driving; such as lighting a cigarette or pipe or Sigar or bide, knocking off the ash.

Inadvertantly setting fire to the bed or to clothes or surrounding property. In the U.S. in one year the damage to property due to fires stated from cigarettes was 80 crore dollars, and killed 1,800 people.

Miscellaneous disorders: A large variety of such conditions is seen, they are associated with smoking, tobacco. However these are not common, conjunctivitis from cigarette, bidi or cigar smoke and increases in the size of the blind spot. Sudden blindness due to retinal artery obstruction.

Hearing loss due to decrease in the blood supply of the cochlea increase in incidence of aortic aneurysms and cirrhosis liver. Crohns disease and ulcerative colitis, thyroid disease, increased vulnerability to influenza and pneumonia. Higher death rate in tubercular patients. Spread of infective diseases through the medium of the common Hukka.

Mortality and Morbidity :

Though many studies would confirm the effect of illness, hospitalisation and even death associated with the use of tobacco, it is informative to have some knowledge of this. In India more than 8 lacs people die each year due to tobacco, upto 12 per 10,000 people die due to tobacco and smoking per year, and upto 53 per 10,000 people are admitted in hospital each year due to tobacco, making it 7% of all bed days of all illness (W. Australia).

What a waste of life and manpower???

This is preventable by the simple fact of stopping to smoke. In most of these diseases the risk decreased by 90% within 18 month to five years (except COAD)

Smokeless Tobacco :

In those who chew tobacco the risk of leukoplakia (a precancerous condition) was as high as 18-64% Cancers of the cheek and gum were common. Cancers of the larynx, oesophagus, and the pancreas were also seen. They were also found to have associations of sudden high blood pressure, periodontal disease and dependence.

Effect on Non smokers :

Non smokers inhaling the exhaled smoke from smokers, are also at risk

perhaps not as much as the smokers but significantly so never the less. Living in the same room as a smoker can increase the risk of lung cancer by as much as 30% for nonsmokers, (75% in smokers). This clearly poses a threat to all non smokers. Surely this calls for some action. □

5. SMOKING AND HEART ATTACK ★

Smoking reduces a man's life span by 2250 days. In certain category of smokers, the incidence of heart attack is ten times greater than non smokers. In smokers under 45 years of age, 80% of deaths due to heart attack, are due to smoking and chances of sudden death during heart attack are twice as much in a smoker than in a non smoker. The only way to reduce smoking is to give it up completely rather than finding alibis. Regular meditation helps in this task.

Smoking is the biggest preventable menace to mankind. Many serious diseases including lung cancer, bronchitis and heart attack are traced to smoking habits. Smoking in any form whether cigarette, cigar, pipe, bidi or tobacco chewing has been identified as a major risk factor for heart attack. A recent Soviet study has shown that smoking reduces a man's life span by 2250 (over six yrs.). The increasing incidence of heart attack in India, fast spreading among younger generation has been largely on account of smoking habits. Nearly 30 million people in the country are estimated to be victims of heart disease. In Delhi alone, nearly a quarter million in the age group of 25 to 64 are suffering from coronary heart disease leading to angina and heart attack. In the capital, 0.9 million persons have high blood pressure, majority of them being smokers, which if uncontrolled, can lead to heart attack. If smoking is not checked, coronary heart disease may assume epidemic proportions in India and be a major menacing health problems by the year 2000 A.D. The only method to reduce smoking is to give it up completely. Promises to reduce smoking gradually, never come true.

The most important thing for smokers to reduce the chance of having a heart attack or having a second one is to stop smoking. People who smoke nearly 20 cigarettes a day are twice as likely to have a heart attack as non smokers. In smokers of nearly 40 cigarettes a day specially in persons of over 50, who have been smoking for a number of years, the incidence of a heart attack is ten times greater than the non smokers.

Sudden Death

It has been found that in persons under 45 years of age, 80% of deaths during a heart attack are on account of smoking and chances of sudden

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death during a heart attack are twice as much in smoker as a non smoker. Sudden death occurs during a heart attack because the normal electrical stimulus that induces the heart beat in a synchronised manner becomes disorganised causing erratic and ineffective contractions called 'ventricular fibrillation'. The contractions are feeble and cannot pump blood into the various part of the body. No pulse is felt and the heart may stop contracting altogether (cardiac arrest) unless effective resuscitative measures are at hand and are instituted immediately. The risk of having this grave complication is more in younger adults, specially those who smoke.

It is, however, heartening to know that if one had not had any heart attack or angina earlier and he stops smoking, his chances of having a heart attack drop to that of a non smoker in about six months time. Stopping of smoking is also the single most effective means of secondary prevention (recurrence of a heart attack) in heart patients.

Causes of Harmful Effects

The harmful effects of smoking leading to heart disease are due to a number of factors. These are (1) Nicotine content of tobacco which is responsible for addiction, stimulates secretion of a chemical called adrenaline which increases the heart rate, rises blood pressure and increases work load of the heart; (2) Carbon monoxide content of the smoke combines with haemoglobin in the red blood cells and impairs their capacity to transport oxygen to vital organs including heart muscles; (3) Smoking interferes with the functioning of platelets and increases the tendency of the blood to clot. Platelets are the components of blood which are involved in the clotting mechanism of blood. a thrombus of a clot in narrowed portion of the coronary artery leads to a heart attack; (4) Tobacco smoke also contains acetaldehyde. This can cause early wrinkling of the skin and also emphysema and fibrosis of the lungs which means less oxygen supply to the heart; (5) Tobacco smoke also contains hydrocarbons which, besides possibly causing cancer, can cause mutations of the cells leading to the formation of atherosclerotic plaques which is the cause of heart disease; (6) Smoking also raises the level of serum cholesterol and high cholesterol which is a major risk factor for a heart attack; (7) The risk of a heart attack among women smokers who use contraceptives is ten times more than the women who do not smoke.

Smoking also leads to pain and stiffness in the leg while walking. No amount of drugs can help. The only remedy is to give up smoking. If women smoke during pregnancy, there is an increased risk of death of the baby in the womb or soon after birth. Even where the baby survives, there is likelihood of delayed physical and intellectual development of the baby till he reaches 11 years of age.

Passive Smoking

Still worse the fact about smoking is that passive smoking is equally dangerous. Passive smokers are those who do not smoke but being in the

company of smokers have to inhale smoke exhaled by the smokers. They are equally prone to heart disease, lung cancer and bronchitis, for no fault of theirs. It is seen that the incidence of these diseases is greater among women whose husbands are heavy smokers. As such every non smoker has a fundamental right to safeguard himself against the danger of passive smoking. "Your smoking is injurious to my health and I have a right to stop you from smoking" could be the slogan against passive smoking. It is great threat to the health of individual, family and the society. In fact one has to choose between health and smoking including passive smoking. One cannot have both.

Smoking or Health : You cannot have BOTH

Another matter or grave concern about smoking is the long time interval between the start of smoking habit and the manifestation of deadly diseases like cancer, chronic bronchitis and heart attack. People are generally not aware of the link between smoking and the misery they have to undergo years later, and younger people after fall victim to this menacing habit under the wrong impression that they are immune to its disastrous effects not realising that they are heading towards a catastrophe. The prolonged incubation period of many tobacco-related diseases has prevented recognition of the size of the threat and the grim picture of chronic and life threatening diseases. □

6. TOBACCO AND GASTRO-INTESTINAL TRACT ★

I am here only talking to you about the effect of Nicotine on Gastro-intestinal tract.

However one or two points that strike me are that the harmful effects of nicotine are not very well highlighted in the G.I. domain. Perhaps some bright gastro-enterologist may start an association called AMGIN—*Association of Miseries of Gastrointestinal Tract by Nicotine*.

There is a relevance in this country because of our eating habits and luxuries of pan chewing with tobacco and pan bahar. Where else in the world does one get carcinoma of posterior part of tongue because of this filthy habit of pan chewing. You only have to see the teeth of some of our Biharies.

I could add here that absorption of nicotine is same whether you inhale it or ingest it. It produces addiction anyway.

There is a strong relationship of Ca of oesophages and oesophageal reflex at lower end with nicotine. There is no doubt about that.

Lower down in stomach nicotine may not cause cancer but it certainly has a lot to do indirectly with peptic ulcer. It neutralises alkalies releasing more acid. The recovery of peptic ulcer on treatment can be delayed or there can be more relapses in people who swallow nicotine.

Nicotine also contributes to the formation of cancer of Pancreas. □

7. SMOKING AND PREGNANCY ★

The facts that a pregnant woman who smokes is more prone to abortion, premature and dysmature infant deliveries and a higher perinatal mortality, are now so well established that I do not have to re-state them. What I would like to do is to explain (as far as it can be done) *how* these effects are produced. I apologize if my explanations are so simple as to insult your knowledge; my aim is to make it so simple that you can make it even simpler to your patients and friends.

Before we touch on the subject of tobacco, we must review the structure and function of the placenta, since this is the pathway from mother to fetus. The placenta is a marvellous filter, permitting substances to travel from mother to infant and vice versa, but it is designed to last only 9 months, and the last of these months finds it degenerating quite definitely ... even under the most optimal circumstances. Any thing which damages the placenta must damage the end-organ which it serves i.e. the fetus.

I have with me a diagram of one small section of placenta. Here is the uterine wall with its multiple blood vessels which open into a lake of blood surrounding the placenta. Maternal blood is pumped into the lake, circulates around placental tissue and drains off through other vessels. In the centre is a villus—multiple, branching finger like structures. A fetal blood vessel enters this villus, rapidly divides into capillaries which rejoin and leave the villus through an umbilical vein. Fetal blood is never in contact with maternal blood—the two are demarcated by an extremely thin membrane. Through this membrane oxygen and carbon-dioxide, nutrients from the maternal blood, and waste products from the fetus diffuse. This thin membrane has a fantastic ability to choose what it wants to let through in either direction *provided it is normal*. Tobacco and particularly nicotine—*damages* the filtering power of the placental villus, and damages the flow of maternal blood from the uterine wall. HOW??

1. Nicotine increases the deposition of cholesterol on the small arteries. Blood flow with nutrients from the mother is diminished to the fetus. This explains the premature and dysmature infants which are born to smoking mothers.

2. Nicotine causes spasm of the small arteries and arterioles in the mother's body. This (a) further reduces blood flow to the fetus and (b) forces the heart to work harder in order to pump blood around the body. A person who smokes 15-20 cigarettes daily may cause his blood pressure to go up by as much as 40 mm/Hg. May be a pregnant mother will not smoke that much, but anything which raises the B.P. above normal in pregnancy is *dangerous*.

3. Nicotine is a potent poison which damages the filter membrane of the villus so that it cannot work effectively.

4. Resulting from this, nicotine enters the fetal blood and affects the baby's heart rate. Within 10 minutes of a pregnant woman smoking a cigarette, the baby's heart rate has been shown to go up, and to become irregular.

5. Carbon monoxide is a constituent of cigarette smoke. It has a great affinity for the globin part of the red cells and displaces the oxygen carrying part of the red cells. After one cigarette the haemoglobin may be reduced as much as 1/5th for a while. When one considers the anaemia which is normal to so many women in this land, it is a wonder that a smoking pregnant woman ever produces a living infant.

6. And finally, tobacco smoking not only affects the fetus; it also affects the mother's ovaries. Twice as many female smokers as non-smokers fail to conceive within 5 years of stopping contraception in order to start a family. I know that family planning is an urgent need in this country, but it seems to me there are better ways of achieving it than this.

I know too, that perhaps there are too many women in this land, but when we understand that coronary heart disease in women in the reproductive years increases with cigarette consumption exactly as it does with men, and then if we add the risks of circulatory disease by use of the contraceptive pill, it seems there should be a better way to deal with our fertile women.

Most distressing is the news that teenaged girls are taking up smoking more rapidly than are the boys. In at least 19 countries more girls than boys smoke, and in others the rates are equal. A recent survey of young pregnant women, in 3 of the S. American countries showed that between 29-48% smoked. Let us not sit back complacently thinking that we have a good control of our girls. Did you know that a recent study showed that 67% of women in Andhra Pradesh smoke? Today daughter and son, do not smoke—what about tomorrow? □

8. SMOKING AND ELDERLY ★

Smoking is prevalent as an epidemiological problem at all ages after childhood. Accordingly to some, it is most prevalent in 4th and 5th decade but special concern also exists with regard to smoking by adolescents and by women. Although smoking slightly diminishes after the age of 60 years but it has special relevance in this age group also. Smoking is associated with several health hazards at all ages but following description is restricted to elderly persons only.

Biological alternations that accompany aging and are relevant from the point of smoking are:

- 1) Impaired lung functions.

- 2) Impaired cardiovascular functions, poor circulation, hyperlipaedis, coronary disease.
- 3) Vulnerability to oncogenesis.
- 4) Impaired glucose tolerance.
- 5) Impaired reproductive function and performance.

Smoking methods

Bidi smoking is very frequent in our country. Cigarette smoking comes next. Uncommon modes are Hukka smoking, chilam smoking and some special methods like reverse smoking of *chuttas* at places like Visakhapatnam. Tar and nicotine content is higher in Bidis than cigarettes.

Health Hazards specially relevant to elderly :

- (i) Bronchitis, emphysema and chronic obstructive diseases are more prevalent in elderly and with smoking, their incidence sharply increases. Symptoms of coughs, sputum, wheezing and dyspnoea are found more in elderly smoke than elderly non smokers. They can also get diffuse pulmonary fibrosis.
- (ii) Lung cancer is strongly associated with smoking and it is more with respect to elderly people. Risk of developing cancer increases with the duration of smoking, number of cigarettes smoked per day, inhalation, and age when smoking is begun. The risk is lower in combined group of pipe, cigar and cigarettes smokers alone.
- (iii) Other cancer reported amongst smokers are oesophageal cancer, oral cancer, laryngeal cancer and to some extent gastric cancer and cervical cancer in females. Cancer of the hard palate is associated with reverse smoking.
- (iv) Cardiovascular disorders includes greater vulnerability to ischaemic heart disease, hypertension, peripheral vascular disease and to some extent aortic aneurysm and cerebrovascular disease. Atherosclerosis and hyperlipidemia contribute to these disorders.
- (v) There is some reported evidence of depressed reproductive function including impaired spermatogenesis under the influence of smoking. Those elderly females on oestrogen replacement therapy are also more susceptible to cardiovascular and cerebrovascular complications such as subarachnoid haemorrhage.
- (vi) Smoking has special relevance for diabetics. In addition to macrovascular disease of atherosclerotic origin as in non diabetics, smoking is suspected to contribute to microvascular disease also. Smoking causes tissue hypoxia by increasing carboxyhaemoglobin and hence liable to cause organ damage in hyperglycaemia several reports suggest macroproteinuria and proliferative retinopathy linked to smoking in diabetics. □

9. INVOLUNTARY EXPOSURE TO ENVIRONMENTAL TOBACCO SMOKE (ETS) ★

(PASSIVE OR FORCED TOBACCO SMOKING)

Non-smokers have no choice about breathing tobacco smoke in the company of smokers. For example, a non-smoking musician who plays in smoky bars and lives with a chain smoker passively smokes the equivalent of 14 cigarettes a day.

Evidence linking active smoking to lung cancer, coronary heart disease, chronic bronchitis and emphysema is well established in medical literature. It is true that the ill-effects of smoking on health are largely confined to the individual smoker as far as major diseases are concerned but a non-smoker may also be-exposed to harmful concentrations of smoke—even without himself smoking a cigarette. The non-smokers involuntarily inhale the 'side-stream' tobacco smoke, which is popularly termed 'passive smoking.' In fact, the correct term might rather be 'forced smoking'.

SIDESTREAM SMOKE

Over 4000 chemical compounds have been identified in cigarette smoke, and their proportion in side-stream versus main-stream smoke constituents vary tremendously. Analysis of side-stream smoke has shown that it contains more of the combustion products of tobacco than the main-stream smoke. For example, the side-stream smoke contains 5 times the carbon monoxide (CO), 3 times the tar and nicotine, 4 times the benzo (a) pyrene, and 46 times the ammonia, as well as higher concentrations of many other noxious substances. One Czech study found the concentration of benzo (a) pyrene to be 10 to 30 times higher in smoke-filled public houses in Prague than in the 'normal' air of the city.

It has been estimated that in ill-ventilated enclosed spaces a non-smoker could inhale in one hour as much smoke as an average smoker inhales from one cigarette.

ILL-EFFECTS AND RISKS OF SERIOUS DISEASE DUE TO PASSIVE SMOKING : UNDER DIFFERENT CONDITIONS AND VARIOUS AGE-GROUPS

Symptoms in ill-Ventilated Spaces

Concentrations of CO in small ill-ventilated spaces due to smoking can reach levels that exceed those permitted in industry, e.g. in cars, bars, offices, etc.

Symptom After Long Stay or Heavy Exposure

If the stay in tobacco smoke filled rooms is of longer duration or exposure

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to environmental smoke is heavy, even healthy adults may complain of irritation of the eyes, nose and throat and sensations of 'unpleasantness'. Some may complain of nausea and headache. Although these effects carry no long term impairment of health they are nevertheless the cause of *considerable distress* to individuals and may result in *loss of efficiency* at work. On both these grounds non-smokers merit more attention from employers and the smoking public.

Allergic and Asthmatic Subjects

Respiratory distress may be experienced by allergic and asthmatic subjects exposed to heavy environmental tobacco (ETS); even an acute attack may be precipitated due to ETS.

Effects on Car Drivers and Airline Pilots

Mild degree of exposure to CO may not pose any health hazard but concern has been voiced about the effects of CO exposure from smoking in conditions where the ability to perceive and react to stimuli is important, especially if CO levels exceed those permitted in industry. Evidence on this point is unclear, but the possible interaction of CO with alcohol, fatigue and altitude resulting in impaired psychomotor performance should be borne in mind.

Subjects With Cardiac Insufficiency

It is a fact that non-smokers may experience a moderate rise in carboxy-haemoglobin after exposure to ETS and the same may prejudice the cardiac function of people with coronary heart disease. For people suffering from cardiac insufficiency, any reduction in oxygen-carrying capacity of the blood can be risky.

Exposure to ETS has obvious implications for policy on smoking in public places as well as in all work situations—offices, committee meetings, etc.

Pregnancy and Smoking and Ill-Effects on Fetus and Newborn

The fetus can receive nicotine, toxic chemicals, radioactive polonium, etc. through the mother's blood whether she smokes or chews tobacco. Studies have reported that smoking mothers are more likely to have spontaneous abortions, retarded fetal growth, premature delivery, and perinatal loss than are non-smoking mothers.

There is a suggestion that there may be an increased risk of congenital malformations in new-borns whose mothers smoke during pregnancy; this suggestion needs further research.

Lactating Mothers who Smoke: Research has shown that nursing mothers who smoke pass nicotine to their babies in their milk. This means that the new-born, if breast-fed, will absorb nicotine. However, an unusual discovery has been the passing of more DDT through breast-milk to her child by a lactating mother who smokes than the mother who does not smoke.

Effects of Passive Smoking on Infants and Children :

Children with parents who smoke regularly, experience much higher rates of respiratory illness such as colds, bronchitis, pneumonia, asthma, etc. It has been reported that infants whose parents smoke are twice as likely to get bronchitis and pneumonia as compared to infants with non-smoking mothers.

Tonsillectomy and/or adenoidectomy is considered as an index of repeated upper respiratory tract disease in early childhood. In a study of nearly 4000 Paris school-children and students aged 12-20, these operations were very significantly related to the amount of smoking by each parent.

Studies have indicated that general smoking retards child development—physical as well as intellectual.

It is estimated that millions of babies are born to women who smoke, and are, therefore, potentially handicapped by their own mothers. As tobacco seriously endangers infants' lives, every attempt should be made to force the expectant mothers to give up this pernicious habit.

Lung Cancer in Women Due to Passive Smoking of ETS

It was in 1981 that Hirayama from Japan and Trichopoulos et al from Greece first showed the possible association of ETS with lung cancer in women. In those studies, non-smoking wives married to husbands who smoked 20 or more cigarettes per day were estimated to have double the risk of lung cancer compared to those married to non-smoking husbands.

Heart Attacks in Women Due to Passive Smoking of ETS

A study from California has reported that non-smoking wives of smoking men had three times the risk of heart attacks than those whose husband did not smoke.

In the USA, people typically spend 90% of their time indoors. At home, over 60% of all households have at least one smoker. On the job, about 63% of workers are exposed to ETS. It has been estimated that only about 14% of Americans escape being exposed to ETS in the home or at the place of work; the rest non-smokers involuntarily smoke, on an average, the equivalent of almost one cigarette per day.

Protecting the indoor passive cigarette smokers from tobacco carcinogens requires urgent action. It is impractical to increase the ventilation in a building because it is very expensive.

The only certain way to make indoor safe from cigarette smoke is not to allow cigarette smoking.

It is feared that involuntary exposure to cigarette smoke or passive smoking causes more cancer deaths than any other environmental pollutant. Protecting passive smokers or non-smokers from cigarette smoke will require a marked change and effective action in community's and State's

handing of cigarette smoking which must help in reducing the direct threat to smokers also. □

10. PASSIVE SMOKING ★

Smoking is becoming increasingly frequent in developing countries. There is constant increase in smoking related diseases. These diseases are costly to treat and require expensive hospital facilities. Developing countries like ours can hardly be able to afford this kind of huge and PREVENTABLE expenditure. The loss to the person, family and the nation is dual, firstly the expense of treatment and secondly the loss encountered due to prolonged morbidity and chronic absenteeism from work. The incidence is rising steeply in our country and is at the peak amongst the upper class of people especially in cities. These are the people who matter. Thus smoking causes depletion among the better educated strata of the population through excessive morbidity and premature mortality.

Active smoking (or the actual smokers) is beyond doubt harmful to the health. It is associated with substantial increase in morbidity and premature mortality. It has a constant and direct relationship with Hypertension, Ischemic Heart Disease, Asthma, Bronchitis, Emphysema, Lung Cancer etc.

But more and more work is going on now on the hazards of passive smoking or due to involuntary exposure to the smoke. There are convincing reports that it is equally harmful to health. It remains true that "the health effect of smoking are largely confined to the individual smoker as far as the major diseases that threaten life are concerned but the non smokers exposed to the side stream and mainstream smoke of smokers in enclosed, ill ventilated spaces are exposed to harmful concentrations of smoke. Such places are travelling in cars, sitting in small offices, travelling in trains, planes etc. Substantial increase in carbon monoxide levels exceeding those considered safe in industrial working places has been encountered.

Is India facing a problem of Passive Smoking?

India is the third largest producer of tobacco in the world. The area under tobacco cultivation is 450000 hectares and accounts for 0.3% of the total area under crops. The total production is approximately 440 million Kg and consists of almost all type of tobacco. 80% of the total quantity produced is consumed within the country which is around 340 million Kg/Year consumption. Excise revenue from tobacco is as high as Rs. 7,500 million per annum and the export earnings are of the level of Rs. 2000 million per annum. Tobacco is also a labour intensive crop, giving employment to a large number of people.

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Most of the tobacco consumption is in form of smokes, either as cigarettes, cigars or pipes. Though tobacco chewing is quite prevalent in our country the major consumption is in the form of smoke. Imagining that around 80% of total tobacco consumption is as smoke, nearly 270 million Kg of tobacco is burned into smoke, which is exhaled in the atmosphere by the smokers. This is a substantial amount of contamination to already polluted atmosphere.

We the non smokers, for no fault of ours are innocent victims of these activities and we inhale these smoke passively, the act which is involuntary and not in our control.

There is a recent propaganda that there is decreased incidence of smoke related complications amongst smokers who do not inhale at all or do not inhale deeply. This has led to substantial increase in smoking habits, increasing the incidence of involuntary smoking to others. This is a nice way of killing others and simultaneously saving your own neck.

Exhaled smoke contains even more harmful ingredients than the inhaled smoke. It contains nicotine, carbon monoxide and other ingredients. Levels of carboxyhaemoglobin and nicotine contents have been found to be high amongst non smokers exposed to involuntary smoking.

An atmosphere contaminated with tobacco smoke may also cause discomfort to a non smoker, as this may cause distress to subjects with asthma, attacks of which are not infrequently precipitated by a smoky atmosphere. It has also been found that the children of parents who smoke are liable to chest illness than the children of parents who do not smoke. There is an increased incidence of bronchitis and pneumonia by 2 fold in the first year of life. Children of parents who smoke are not only at risk before they are born, but suffer an increased risk of potentially serious illness during their first year of life.

Incidence of Lung Cancer and heart attacks have been reported to be high in wives of smoker husbands. This is of much value in our country where the women are usually house wives and staying in small congested places with joint families where most of the male members smoke. No clear cut data are available on the prevalence of smoking in India. One of the studies has shown that among males 59.5% were smokers & 51.07% were tobacco chewers. Another survey done in Meerut, showed that 37.4% of male and 2% of females smoke, in all age groups. But if the age group above 10 years were considered 51.7% of males and 3% of females were found to be regular smokers. The prevalence rate increases with age. Amongst males of 10-14 years it is 17.5% as compared to 90% among those above 15 years. One of the surveys done by us in a village near Sonapatna, showed 100% of people (Males) were smokers above the age of 15 years.

With more than 50% of male population being smokers in a community, there is very high prevalence of passive smoking. This is more risky in

cities than in villages, where there are more congested spaces as compared to villages where there are more open areas

Also with continuing industrialisation and westernisation more and more people are gathering in social evenings and late nights in smaller places with net result of a completely smoky atmosphere.

Control

Almost all the complication shown with active smoking can be seen with passive smoking. Every one of us has to pay for living in places like Delhi. We all are smoking about 10-20 cigarettes a day because of passive smoking and hence are at a substantial risk of developing a major ischaemic episode.

If you are smoker on top of that, you are adding on to the already existing burden to your heart. We always tell our patients that if you want to smoke you must go and live in places like HIMALAYAS where the incidence of passive smoking will be less.

It is difficult to convince a patient that smoking is hazards to health. All the nationwide programme to control smoking by way of advertising and educating smokers that they must stop smoking have failed. We have many examples in our clinical practice, where people have stopped coming to us for consultation because each time we tell them the harmful effects of smoking.

The time now is to tell the BENEFIT OF SMOKING. A workshop/Seminar can go for hours together and even for days with the topic of hazards of smoking, with no fruitful ending. The best idea will be to conduct a major workshop involving mass public with the topic on "benefits of smoking." This will be the shortest symposium ever taken place in the medical history, as there are NO BENEFITS. But the impact on the public will be much more than the symposia on hazards of smoking.

Non Smokers Rights should be preserved. Non smokers have a right to live in a pollution and smoke free healthy environment and protect their health from the dreadful complications.

It is the non smokers who should make a union and come forward and fight against people who smoke in front of them. Slogans like YOUR SMOKING IS INJURIOUS TO MY HEALTH, IF YOU WANT TO COMMIT SUICIDE DO IT—WHY ARE YOU KILLING ME etc. should be displayed.

Public should be educated that according to the Law of Torts, any act by others either by omission or commission, causing injury is punishable by Law. A passive smoker has the right to SUE a smoker for the injury inflicted to him. Once that starts happening in our country, the smokers will wake up. Recently a law suit of this nature is under trial in California in USA.

Banning of smoking by Government and the action taken by the non smokers is the only answer to prevent the dreadful diseases. □

11. PREVENTION OF SMOKING ★

In view of the growing consensus on ill-effects of tobacco consumption, particularly of bidis and cigarettes, it is felt that time is opportune to plan comprehensive strategy for the prevention of smoking and control of tobacco related health hazards. The available evidence from intervention programmes aimed at persuading tobacco habituees to give up the habits suggests feasibility of the same being achieved. Such a programme of primary prevention would be cost beneficial in the long run.

Following measures of primary prevention are suggested:

1. National Policy

There should be a national Committee to coordinate national activity to control smoking. The national policy must emphasise the following:

- (a) Restrictions on cigarette advertisements in TV, radio, newspapers etc.
- (b) Compulsory inscription on all cartons/packets of cigarettes/bidis—'Smoking is injurious to health'. In fact, this has already been enforced under the cigarettes Act, 1975.
- (c) Prevention of smoking in public places.
- (d) Ban on import of cigarettes.
- (e) Alternative cash crops—tobacco may be replaced by equally remunerative cash crops e.g. cotton, jute, oil seeds, sugar cane and pulses.

2. Health Education

Information on tobacco related health hazards should be disseminated at various levels like schools, colleges, in school health programme and adult education classes, hospitals, dispensaries and primary health infrastructure. Non-smoking should be regarded as a normal social behaviour. Positive benefit of stopping.

Smoking should be stressed. Switching to pipe/cigar is no alternative. It should be emphasised that children of cigarette smoking parents have more chances to become smokers.

3. Display of Harmful Effects of Smoking

Harmful effects of smoking should be highlighted through various media by display of:

- (a) Pathological specimens of heart (athero-sclerosis), lungs (cancer) and stomach/intestines (peptic ulcer).
- (b) Chest X-Rays showing smoking hazards.
- (c) Deficit respiratory function tests.

- (d) Adverse effects during pregnancy—sterility, still-birth, premature birth etc.
- (e) Important risk factor for coronary heart disease, hypertension, lung/oral cancer, and peptic ulcer.

4. Community Involvement

Formal and informal leaders, teachers and health care professionals e.g. doctors and paramedicals should set an example for not smoking. Religious and social organisations/institutions can play an important role in organising anti-smoking clinics. The individuals who have improved their health after leaving smoking should be made vocal in propagating the positive benefits of stopping smoking.

5. Anti-Smoking Clinics

Anti-smoking clinics should be established to assist smokers to leave smoking. The health care professionals and social workers have to play a vital role in such clinics. With wise and tactful counselling, firm, kind and steady pressure, some patients respond promptly, others require long term efforts. It is noteworthy that physicians have been particularly successful in giving up smoking and are in a unique position to exert great influence in helping their patients stop smoking. The evidence on the harmful effects of cigarettes smoking is so overwhelming that the physician must use all his understanding, authority and example to help his patient stop smoking.

Anti-smoking advice may be combined with other elements of preventive approach to healthy living e.g. exercise and games. Interaction between these elements may strengthen the motivation and ability of the patients to gain new living patterns. Drugs have been found no more valuable than placebo in aiding the patient to stop smoking.

6. Research

Research is an important component of primary prevention for smoking. The research activities should be focused on:

- (a) Epidemiological aspects of smoking.
- (b) Study of attitude/behavioural pattern of smokers.
- (c) Pathological aspects of smoking.
- (d) Tobacco-health economics with special emphasis on health costs.
- (e) Methods of persuasion/motivation to stop smoking.

Primary prevention is the only approach for prevention of smoking. A well defined national policy, establishment of anti-smoking campaign with emphasis on harmful effects of smoking and the important role of health care professionals, social workers and religious/social organisations are considered important measures of prevention. □

12. HOW TO HELP PATIENTS TO STOP SMOKING ★

The overwhelming weight of scientific evidence clearly establishes cigarette smoking as a grave threat to personal health. This unpleasant fact coming out of pleasure giving habit can no longer be ignored and if we help our patients to stop smoking we will be practicing a highly effective preventive medicine. The experience of British doctor's prospective study with the substantial decrease in mortality from not only lung cancer, but also chronic bronchitis as their smoking decreased after the preliminary reports of the study, not only strengthen the conclusion of a causal relationship, but more important, provide the evidence that prevention is indeed possible. While prevention was the main reason for the striking curtailment of cigarette smoking, among their own profession, not many doctors take on the responsibility of helping their own patients give up smoking.

There are two aspects of this problem (a) telling the patients to quit smoking and (b) secondly, offering to help him quit smoking. While advising to give up smoking is easy, it is helping him to stop the habit that is a different task for the doctor. There is enough evidence that action by family doctors could lead to many people giving up cigarettes.

It goes without saying that to be effective as a salesman for non-smoking the physician must know where he stands on the cigarette issue. Does he smoke himself? Because if he does it would be extremely difficult for him to advise a patient to stop smoking. His lip advice to give up smoking will have little weight and not be enough.

There are three steps one can take when guiding a patient to give up cigarettes:—

I. Motivation

It will help to motivate a patient if he is told that there is a direct connection between his symptoms and his cigarettes i.e. cough, morning sputum, draining nasal sinuses, shortness of breath, mid-day fatigue etc. Other ways of motivation can be to warn him that his smoking can (a) harm his spouse also, (b) that children can have more frequent attacks of acute respiratory infections if one or both patients smoke and (c) for some economics of smoking may have significance—a 30 year habit at 5% compounded interest adds up to a substantial sum, (b) some will stop on a bet.

II. Begin Changing Behaviour

(i) Although every smoker must eventually stop smoking why rush him? After all he did not get into this habit overnight, so why must he try to get out of it overnight. I would suggest gradual withdrawal. Do not say "Be a man and stop at once. No more smoking from this moment".

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In some cases, however, it may be necessary to break the habit suddenly and completely, since the patient cannot taper off. This phenomenon of giving up suddenly has been described as 'going cold Turkey'.

(ii) Advise him to buy only one pack of cigarette at a time. Never by a carton.

(iii) He should keep his cigarettes in different places and not in his pocket so that access to the cigarette is an effort.

(iv) Never carry matches or a lighter.

(v) Hide the ash-trays.

(vi) Change brands once a week.

(vii) Stock up temporary substitutes like chewing gum, low calorie candies, artificial cigarettes, or sugar etc.

(viii) Always take seats in the non-smoking areas of planes, trains or other public transports.

III. Attitude

What attitude should the patient adopt as he begins his programme of giving up smoking? Basically there are two attitude postures the smoker can adopt. It can either be a *minus* attitude or a *plus* attitude. When the attitude is *minus* there is a marked tendency to being feeling sorry for oneself. The longer the denial, the greater the psychological distress which, in turn, works to generate an intense desire to smoke. This is further aggravated by certain withdrawal symptoms most of these symptoms actually reflect anxiety and tension. Shortness of breath, tightness in the chest, visual disturbances, sweats, headaches, gastro-intestinal disturbances are some of the common complaints during the programme of withdrawal. The smoker should be cautioned not to be alarmed and to look upon his symptoms as an indication that his body is actively re-adjusting to the non-smoking state. These symptoms usually subside within a matter of days or weeks.

If the attitude is *plus* the patient knows if he did not smoke he added to his life and was investing in a more constructive and healthy life.

Let us try to take a lead, so to speak, from the cigarette companies. They link smoking with sex, youth, athletic prowess and being a real man or woman. They bring out such advertisement slogans as "made for each other"—the man or the woman or the cigarette and the man. Let us try to create same association with not smoking. The only difference is that they have untold millions to spend, sophisticated agencies to do their bidding and years of practice. We have no money to counter their propaganda, we have our responsibility towards our patients and the nation—Tobacco smoking is a national scourge that has to be eliminated in the interest of nations health and economy. We have to wean away from this habit not only those who have smoke-related diseases but even those who are without demonstrable smoking-related diseases. □

13. TOBACCO USE IN INDIA—A FEW FACTS & FIGURES ★

1. In India, tobacco is used in the form of cigarettes, cigars, *biddi*, *hukka*, *chutta* or reverse smoking and chewing.
2. Indians consume 700 gm. of tobacco per adult per year out of which 300 gm. is *biddi* tobacco and 200 gm. is cigarette tobacco.
3. About 80% of all males and 40% of all females over the age of 10 years use tobacco in India.
4. With an estimated population of about 800 million Indians in 1988, there are 225 million males and 112 million females over the age of 10 years who use tobacco in one form or the other—a total of 337 million Indians.
5. It is estimated that about one million deaths annually are attributable to smoking and other tobacco products in India.
6. With an estimated population of about 800 million Indians; and with a general death rate of 12.5/100 population, a total of 10 million Indians would die during the calendar year 1988, out of which one million or 10% would be due to tobacco use.
7. In developed countries, smoking is responsible for 90% of deaths due to lung cancer, 75% due to bronchitis/emphysema and 25% due to ischaemic heart disease under the age of 65 years. The same could be true of India also.
8. There are about 1.5 million registered cancer patients in India and smoking is the cause of one-third of these cases.
9. Studies have revealed the estimated risk of developing cancer or hard palate to be 132 times greater in females who smoked *chutta* or reverse smoking, which is very common in Andhra Pradesh.
10. India is world's third leading producer of tobacco, after China and the United States
11. Production of tobacco grown commercially in India increased from 380,000 tonnes in 1976 to 445,000 tonnes in 1978.
12. Cigarette is taxed at the rate of about 440% in India.
13. Seventy-two paise out of a packet price of a rupee goes to the Indian Government as tax
14. Tobacco fetched a revenue of Rs. 9060 million during 1983-84 for the Government of India.
15. One paise extra levy on expensive cigarette would yield about Rs. 1000 million per year
16. Production of cigarette in India increased from 21 billion pieces per year in 1950 to 62 billion pieces in 1970 and 80 billion pieces in 1980.
17. During 1982-83, the production of cigarettes in India was 120 million sticks per day.
18. The *biddi* production was 675 billion pieces in 1980. Two hundred and fifty billion *biddis* are manufactured annually from 150 million pounds of tobacco.
19. Cigarette consumption per adult per year in 1977 was 190 cigarettes in India, 2910 in UK and 3590 in USA.
20. *Biddi* consumption in 1977 was 1500 pieces per adult. *Biddi* use is over 90% among people belonging to poor socio-economic group. *Biddis* contain higher level of CO, Ciliotoxic Agents, HCN, Acrolein, Volatile Phenols, Tar and HCS. *Biddis* are associated with a higher risk of cancer of oral cavity, pharynx, larynx and oesophagus.

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TOBACCO AND SMOKING*

SOCIO-ECONOMIC IMPLICATIONS

Tobacco smoking is something that not only affects the smoker medically and economically directly, but also induces costs affecting his family, other taxpayers and community at large. While the production of tobacco in a country contributes to the Gross National Product (GNP) of that country, it does so usually at the expense of reduced food production and the consumption of fuel to provide that for *curing* tobacco. There is, besides, a danger of other adverse economic and ecological effects.¹

It is to be realized that smoking is a community event: it is irrespective of the social or educational status of an individual. Country's working capacity is reduced by smoking and thereby the GNP because of the following:

1. *Higher morbidity and absentee rate*: smokers have higher absenteeism due to higher acute morbidity.
2. *Higher disablement rates*: non-fatal chronic morbidity is higher, leading to disability.
3. *Higher demand for primary and hospital care*: the deleterious health consequences of smoking generate extra demand for primary medical care and also hospital care which when given and paid for are real costs to community and cannot be recovered.
4. *Higher premature mortality*: there is higher mortality before retirement age, affecting both—the family of the diseased as well as the community.

It is obvious from the foregoing that smoking gives rise to costs involving both lost productivity, because of increased morbidity and mortality, and increased health service expenditure. Rightly, the WHO Expert Committee on Smoking Control declared that "the smoking problem is now a world wide epidemic". There is no doubt that this world wide epidemic has far reaching 'socio-economic implications' which shall be discussed in greater details, providing 'facts and figures' wherever possible.

The Deleterious Health Consequences of Smoking

1. It is now not disputed that smoking is a major cause of morbidity and mortality. However, there may be *genetic pre-disposition* to the development of smoking-related diseases, making such people more susceptible than others to those diseases if they smoke.

2. The Report of the Royal College of Physicians in 1977 estimated that

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10% of all deaths were caused by smoking.² In India, it is estimated to be 6% to 10%.

3. The average loss of life for someone smoking 20 cigarettes a day is 5 years. Many smokers, of course, do better than average and may have a normal life span, while others may die of a disease caused by smoking many years earlier than if they had not smoked.

4. The total number of cigarettes smoked over a lifetime is a more important health index than cigarettes used per day at any time, because health risks increase in proportion to the total amount of tobacco used, that is, intake of smoke constituents in a dose-dependent way. Thus, a man under the age of 25 years smoking 20 cigarettes daily shortens his life, on average, by 10 years.

5. Calculating for each cigarette, on average that the time by which a habitual cigarette smoker's life is shortened is about 5½ minute from each cigarette smoked—almost equal to the time he spends smoking it.

6. Those who smoke 25 or more cigarettes daily have a more than 20 times greater risk of dying from lung cancer than non-smokers. Stopping smoking reduces the risk to that of the life-long non-smoker after about 10 years.

7. A man under 45 years who smokes 25 or more cigarettes a day may have a 15 times greater risk of dying from a heart attack than a non-smoker. This excess risk is reduced rapidly, by about 5% in the first year of stopping and then gradually almost to that of non-smoker by about 10 years. Giving up smoking *after* a heart attack also halves the chance of another.³

8. Cancer of buccal cavity, pharynx, larynx and oesophagus have all been shown to be associated with smoking, with a risk factor estimated to be from 5 to 10 times that of non-smokers.

9. The estimated risk of developing cancer of the hard palate is 132 times greater in women who smoke *chuttas* reverse than in those who do not have this habit. *Chutta* is smoked by women in Andhra Pradesh, India where cigarette or *biddi* is held with the smouldering end inside the mouth.⁴

10. An association between smoking and cancer of the urinary tract, pancreas and penis has also been demonstrated, albeit not as strong as the above mentioned cancers.⁵

11. In India in 1987, there were about 1.5 million registered cancer patients, and smoking was stated to be the cause of one-third of these cases.

12. Smoking accounts for about 90% of deaths from lung cancer, 75% of deaths from chronic bronchitis and 25% of deaths from coronary heart disease in men under the age of 65 years.

13. A quarter of all young men who continue to smoke 20 or more cigarette a day *will die prematurely*. Of 1000 such young men 250 will be killed by smoking, compared with the 6 who will be killed at some time on the road.⁶

14. Tobacco kills 13 times as many Americans as hard drugs do, and 8 times as many as automobile accidents.⁷

15. Lethal effects of direct smoking are obvious. However, it is to be recognised that smoking can be lethal to non-smoker also. The risk of perinatal death is increased by 28% and spontaneous abortions about twice in smoking mothers.⁸

16. If an earning person dies prematurely, the following financial changes may follow :

- (a) The person's income ceases except perhaps for a reduced pension paid to the surviving spouse.
- (b) Welfare payments may be made to the surviving spouse.
- (c) The income of the surviving spouse will normally be considerably less than that of the married couple.

17. Apart from causing higher premature mortality, smoking results in a considerably increased morbidity rate, with its consequence loss of working days, absenteeism, accidents (including fire and explosion) and excessive demands on medical services, both for primary and for hospital care.

18. Respiratory infections, including postoperative ones, are more common in smokers, who take longer to recover. Chronic obstructive lung disease amongst smokers is 10 times that of non-smokers and mortality from this condition amongst heavy smokers is 46 times that of non-smokers.

19. Patients who ultimately die from chronic bronchitis or emphysema usually endure about 10 years of distressing breathlessness before they die.

20. There is a greater likelihood of the most severe and disabling bronchitis developing when heavy cigarette smoking is combined with exposure to atmosphere pollution, e.g., workers who smoke and are employed in industries and/or plants with atmospheric pollution such as Delhi Electricity Supply Undertaking Power Plants at Raj Ghat and Indraprastha Estate.

21. In people who already have a very high arterial pressure, for example, 200/120+, cigarette smoking seems to be an important cause of malignant hypertension.⁹

22. Gastroduodenal ulcer occurs twice as frequently in smokers as in non-smokers, and cigarette smoking is the single most important adverse factor affecting the healing and relapse of duodenal and gastric ulcers.^{10,11}

23. Almost twice as many smokers as non-smokers give birth to babies weighing less than 2000 grams or less by 10% of the normal weight. The under-weight babies have higher perinatal mortality and require specialised equipment and care for management.

24. If the parents smoke, the risk of an infant developing bronchitis or pneumonia in the first year of life is doubled.¹²

25. Adenoidectomy and/or tonsillectomy, considered as an index of repeated upper respiratory tract disease in early childhood, is very significantly related to the amount of smoking by each parent.¹³

26. In Britain, as many as 50 million working days may be lost in industry every year as a consequence of cigarette smoking.

27. It has been reported that both male and female employees who smoked more than 20 cigarettes a day lost twice as much time from work as non-smokers did.

28. Nurses who smoke were shown in one British study to have 2½ times as many days off work as did non-smoking nurses.

29. While many patients recover completely from a heart attack, there are others who remain *invalids* for varying periods, leading to high disablement rates.

30. These various illness impose great strain on the health services. Under the age of 45, smokers compared with non-smokers, as reported in a British study, made consistently greater use of medical and health services, whether in the home (+47%), the clinic (+33%), the out-patient department (+26%), or the hospital ward (+71%). Smoking contributes significantly to the present burden of the health services.

31. When a person contracts a disease the economic perturbations are numerous and interact in various ways. Apart from a lower purchasing power of the family due to expenditure on tobacco, smoking gives rise to costs involving lost productivity, because of increased morbidity and mortality, and increased health service expenditure. For example, an increased incidence of a smoking-related disease will lead to an increased demand for:

- (a) Medical and nursing services,
- (b) Hospital facilities, and
- (c) Pharmaceutical products.

32. Wherever the medical service is on a fee-paying basis, the increased expenditure will be met by grants from health insurance organizations, by reduction of current expenditure on other goods and services, by drawing on savings or by borrowing.

33. If the medical and hospital services are provided *free* by the Government, the immediate effect will be the *deferral* of treatment of patients with lower priority ailments and fewer resources available for those requiring *long-term* care because the State budget for health services is usually fixed for a year or so.

34. In the long run, increased expenditure by the State on additional facilities may be necessary.

35. Certain smoking-related diseases such as chronic bronchitis often

give rise to recurring periods of short-term illness, a pattern that can upset working arrangements at the place of work and so create a burden additional to absenteeism itself.

36. Therefore, under both fee-paying and State-run-free health services, the patient's economic circumstances may be affected by:

- (a) Termination of employment through ill-health, perhaps by early retirement with reduced pension;
- (b) Temporary grant of sick pay by the employer;
- (c) Payment of sickness allowance and social security by the State.

Calculation of Costs due to Deleterious Health Consequences :

To calculate costs involving lost productivity, one must estimate the number of work-days lost and multiply this number by the value of each work-day (which is obtained from the GNP divided by the total work-days).

The number of work-days lost must be estimated separately for each of the relevant categories—premature deaths, disablement and hypermorbidity—in each case taking into account both *demographic data* (e.g., the distribution of the population and age-specific smoking habits) and *epidemiological data* concerning the relationship between smoking exposure and the occurrence of different type of disease.

For premature death such relationships can be expressed by mortality ratios, which are obtained by estimating for each cause of death the ratio of the mortality rates of smokers to those of people who have never smoked. Mortality ratios can apply to a specific disease such as lung cancer or to general mortality.

Similarly techniques can be applied for disablement and morbidity.

Using demographic and epidemiological data, one can also estimate the number of days of *hospital care* and *visits* to doctors that should be attributed to smoking-related morbidity. Costs can be taken from national statistics, including the cost of the *medicaments* used.

Thus, it is possible to estimate the total costs related to hypermorbidity, disablement and premature deaths caused by cigarette smoking.

The Economic Consequences of Cigarette Smoking

A more comprehensive analysis of the economic consequences of cigarette smoking must consider the following factors:

- I. Costs related to the hypermorbidity, disablement and premature deaths caused by cigarette smoking (discussed above).
- II. The cost of research and health education on smoking.
- III. Loss of family purchasing power due to expenditure on smoking.
- IV. The resources employed in the production and sale of cigarettes;
- V. The transfer payments involved in the taxation of cigarettes; The payment of taxes on cigarettes should be regarded neither as creat-

ing assets nor as a loss of assets. It is a transfer of money from smokers as a group to the government treasury.

VI. Costs related to smoking-incurred needs for more efficient ventilation and to the clearing up of ash and litter caused by smokers.

VII. The cost of fires and accidents caused by smokers.

Costs Related to Smoking-Induced Needs for More Efficient Ventilation

Protecting the indoor passive cigarette smokers from environmental tobacco smoke (ETS) and tobacco carcinogens requires urgent action. It is impractical to increase the ventilation in a building because it is very expensive. It is reported that to reduce the risk of cancer due to cigarette smoke would require replacing the volume of air in the living space about 250 times more often than in currently the norm—and use, therefore, 250 times the heating, cooling and pumping. *Is it possible or economical?*

The cost of Fires and Accidents Caused by Smokers

In 1970, the US National Fire Protection Association linked 107,200 building fires, with an estimated total property damages of \$95.9 million (Rs. 1000 million), to matches and cigarettes.¹⁴

It has been reported that smokers are 50% more likely to be cited for traffic violations and be involved in car accidents than non-smokers. The effect of smoking on driver's reflexes and in trying to light a cigarette or reaching for an ashtray were listed among the possible causes.¹⁵

Fires caused by cigarettes kill between 2000 to 4000 Americans each year.⁷ One thing people should not forget and that's "Where there's smoke, there's fire" and the same may cost—in men and in money.

Economic Gains from a given Reduction in Smoking

The economic gains to be expected from a given reduction in smoking can be estimated. It may be reasonable to estimate the benefits to productivity represented by a target of 20% reduction in smoking exposure over a period of about ten years.

In one such study in England, a 20% reduction in smoking from 1973 to 1981 was anticipated, and calculations based on this figure showed an estimated increment of GNP of £42 million, at 1973 values.

Not only the consumption of tobacco entails economic and health-related effects, but a large proportion of the income goes to the transnational tobacco companies rather than to the National Treasury.

Tobacco-growing requires a very large work-force during short peak periods at harvest times—a pattern that creates seasonal unemployment.

The substitution of other food crops for tobacco is a vital factor in implementing smoking control in tobacco-growing nations.

Crops substitution is a good policy for two other reasons also. *Firstly,*

efforts to combat malnutrition should benefit from a shift from the growing of tobacco to the growing of food, and *secondly*, an early shift to other crops might prevent future economic problems arising from the decreasing tobacco consumption in many developed countries. In 1964, the year the Surgeon-General in USA first reported that smoking increased the risk of lung cancer, 40% Americans smoked. In 1986, only 26.5% of adult Americans smoked.¹⁶

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TOBACCO OR HEALTH*

QUESTIONS ANSWERS

INTRODUCTION

THE FACTS: Each year ten lakhs of Indians die prematurely from the effects of smoking and chewing tobacco. Crores more live on with crippled lungs and overstrained hearts. Cigarette smoking is a major cause of:

- | | |
|----------------------|--------------------------|
| = Emphysema | = Lung Cancer |
| = Chronic Bronchitis | = Coronary Heart Disease |

Tobacco Chewing is a major cause of Cancer of mouth. There is no controversy about the facts.

ONE CIGARETTE: The longest you smoke, the deadliest it is. But it does not take years for smoking to affect you. Just a few puffs can hurt.

1. **Just one Cigarette:**

- Speeds up your heart
- Increases your Blood Pressure
- Upsets the flow of blood and air in your lungs
- Causes a drop in the skin temperature of your fingers and toes.

2. **A few puffs** also slow down the action of the cilia inside your bronchial tubes. These tiny hairlike bodies normally work like brooms to sweep out germs, mucous, dirt from your lungs. One Cigarette makes them sluggish. Inhaling over long periods paralyses the cilia completely. Then your lungs are exposed to all kinds of infections. That is one reason why smokers are sick in bed for long periods—wastage of population working hours.

But after sustained periods of not smoking, the cilia begin working again and help sweep trouble.

3. **Hot Smoke:** When you inhale on a cigarette, the hot smoke assaults delicate tissues in your mouth, throat, breathing tubes in lungs. After the smoke passes your mouth your lungs retain 70-90% of the compounds you inhale.

THE TOBACCO PRODUCT

Q. 1. *What are the substances in Tobacco that are dangerous to health?*

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There are thousands of chemical substances in Cigarette/Bidi smoke. Three of the most damaging are Nicotine, Tars, and Carbon Monoxide.

Q. 2. *How are these substances lethal?*

Nicotine, as addictive as cocaine and morphine, creates dependence on tobacco. It also raises blood pressure and the heart rate, thereby increasing the work load of the heart, whose capacity is already weakened by decreased oxygen. Carbon monoxide combined with nicotine pre-disposes the smoker to heart attack and to paralysis and stroke.

Carbon monoxide is the same gas that emanates from a car's exhaust pipe. It literally drives the oxygen out of our red cells in blood. Levels of this gas in the blood of smokers is four times higher—for heavy smokers, sometimes 15 times high—than for non-smokers. Carbon monoxide stays in the blood stream robbing the body of oxygen as long as six hours after the person stops smoking.

Tars damage delicate lung tissues. There are billions of tiny particles in Cigarette/Bidi smoke. When they cool inside our lungs, some form a brown sticky mass containing chemicals that produce cancer; others produce emphysema and chronic bronchitis.

Q. 3. *How Tobacco is smoked in India?*

It is smoked in the form of cigarette, bidi, hukka, chillam, cigar, pipe, chutta (reverse smoking); it is chewed and eaten as tobacco or with paan leaves or with paan masalas.

Q. 4. *Are Cigarettes and Bidis produced in India less harmful?*

Cigarettes manufactured in India contain more nicotine, tar, and carbon monoxide than those manufactured in developed countries. Tobacco of bidis also have more of nicotine, tar and carbon monoxide. Bidi consists of 0.5 G of sun dried and cured tobacco flakes, hand—rolled in a dried leaf of Temburni. Tar in an Indian Cigarette is 19-27 mg, nicotine is 1-14 mg, whereas in a Bidi Tar is more than 23 mg and nicotine is 1.7 to 3 mg. Hence, cigarettes and bidis in India are more harmful.

Q. 5. *Are low-tar, low-nicotine cigarettes less dangerous to health?*

No. To compensate for reduced levels, smokers in India tend to get more value of their money spent, they take deep and long puffs, thereby get more delivery of nicotine, tar and carbon monoxide. We in India take 1.9 puffs of a Cigarette per minute, whereas with Bidi we take 4.7 puffs per minute.

Q. 6. *Are filter-tip Cigarettes hazard-free?*

No. A filter does not screen out carbon monoxide, nor other

harmful gases in the smoke. A filter-tip smoker is still a prime candidate for heart attack and stroke. King-size filter cigarette delivers 1.5 times more nicotine, carbon monoxide and tar in smoke.

- Q. 7. Are Cigars, Pipes, and Hukka less of a threat to the smoker's health?

Marginally less if not inhaled, however, the tobacco used in cigars and pipes is higher in tars and nicotine than in cigarettes. The smoke from Cigar and pipe is thicker and consequently constitutes a greater risk to the non-smokers. Moreover, cigar and pipe burn for a longer time and both side stream and main stream pollute for a long time. With hooka, 24 G of tobacco is smoked through 150 cc water, and in 35 minutes, 0.55 mg. of Nicotine is inhaled.

- Q. 8. *What is smokeless tobacco?*

It's tobacco that is not smoked but chewed: or left in the mouth, even overnight, or snuffed. It is marketed as moist snuff, which is tobacco finely cut as chewing tobacco, which is coarsely cut; as dry snuff, which is dry and finely powdered. It is also taken with Paan or in Paan masalas.

- Q. 9. *Is smokeless tobacco a safe alternative to Cigarettes?*

No, although promoted as such. It is a cause of mouth cancer and tooth decay. Smokeless tobacco contains not only carcinogens but also nicotine, which makes it as habit forming as cigarettes. Cancers of mouth are very prevalent in India because tobacco is kept in the mouth or taken with paan.

- Q. 10. *Isn't smoking an issue of personal choice, as has been complained?*

No, because implicit in choice is the capability of saying "yes" or "no". The smoker who cannot quit is essentially an addict who can't say 'no'.

The tobacco addiction is generally begun during pre-teen years by youngsters who are unaware of its consequences, and who thus fall easy prey to advertising and promotion. There is no adult, rational judgement involved.

THE ECONOMICS OF TOBACCO

- Q. 11. *How many countries grow tobacco?*

Some 120. The developing countries now account for over 60% of the world's production.

- Q. 12. *Where are Cigarettes manufactured throughout the world?*

- About 40 per cent in socialist countries, where cigarettes are manufactured by state-controlled industries.
- About 20 per cent in countries where cigarettes are manufactured by state monopolies.
- The rest by international conglomerates.

Q. 13. *How much tobacco is manufactured in India?*

India is the third largest country in the world, next to China and U.S.A., to produce tobacco. We produce about 44 crore kg. of tobacco per year.

Q. 14. *How many are employed in the tobacco business world-wide?*

- Million for tobacco farming to cigarette vending.
- In developed countries, however, employment is on the decline because of increasing automation and mechanisation, coupled with a drop in smoking.

Q. 15. *How much do smokers spend world-wide yearly in Cigarettes?*

- They spend about US Dollar 100 thousand million yearly.
- The sum buys about 5 million cigarettes, or about 1000 cigarette per year for each man, woman and child on earth.

Q. 16. *What is the estimated proportion of Cigarette smokers throughout the world?*

- In the industrialised world, one third of all males above age 15 smoke cigarettes, in the Third World, about a half.
- Female smokers roughly equals males. In the Third World, about 10 per cent of females smoke, but the proportion is growing.
- In India, statistics on smoking are incomplete because they do not take into account the wide spread consumption of house grown tobacco and cigarette of bidi type. In our population of about 800 million, there are 225 millions males and 113 millions females over the age of 10 years who use tobacco in one form or the other. According to ICMR report of 1982, 59.7 per cent of male population above the age of 15 years smoke. In India roughly one-third are addicted before reaching the age of 20 years.

Q. 17. *How much is non-smoking tobacco utilised in India?*

In India 51% of male population above the age of 15 years chew or eat tobacco; women are not lacking behind, they are about 30%. Total number of people estimated to be chewing or eating tobacco are about 10 crores in India.

Q. 18. *How much is the production of cigarettes in India?*

In 1950, 21 billion pieces were produced, in 1970 it was 62 billion

pieces, in 1980 it was 80 billion pieces, and in 1983 was 120 billion sticks. On the other hand, the bidi production in 1980 was 675 billion pieces.

Q. 19. *What is the estimate of cigarette consumption?*

In the industrialised world, smokers over age of 15 smoke an average of 7 to 10 cigarettes daily. In the Third World, they consume less. In India cigarette consumption per adult per year in 1977 was 190 whereas in U.K. it was 2910, and in U.S.A. it was 3590. But taking into account the bidis, the threat to health overall is greater because the consumption of Bidi in 1977 was 1500 pieces per year per adult.

In short the number of cigarettes and bidi smoked between 1971 and 1981 outstripped population growth for all developing region by 18 per cent of Africa; by 7 per cent for Asia and Latin America.

THE DISEASES DUE TO TOBACCO

Q. 20. *How many die prematurely each year from all diseases caused by Tobacco?*

About 25 lakhs yearly world-wide, or one death from a tobacco related disease every 13 seconds. In India 10 lakh die per year.

Q. 21. *What are estimated mortality rates of the major diseases linked to tobacco?*

— In developed countries cigarettes are linked to atleast 85 per cent of all deaths from Lung Cancer, to 75 per cent from chronic bronchitis, and to 25 per cent from heart diseases.

— Almost all Lung Cancer cases are inoperable. Of those operable, only 5 per cent survive five years.

— Tobacco related diseases account for a substantial part of all causes of death. Cuba heads the list with 30 per cent. About 25%, that is, 1 death in 4, has been attributed to the consequences of smoking in U.S.A., compared with 5 per cent for alcohol, 2 per cent for other addictive substances. In U.K. tobacco related deaths are 15-20 per cent of all mortality. In India 6-10 per cent of all deaths are caused by smoking.

— To cite a few examples in absolute numbers:

Tobacco-related diseases cause some 4 lakh deaths each year in U.S.A., 1,40,000 in Federal Republic of Germany, 1,00,000 in U.K., 70,000 in Italy, 23,000 in Australias, 10,00,000 in India, and in China 20,00,000.

— A habitual cigarette smoker's life is shortened by 5-1/2 minutes from each cigarette smoked.

Q. 22. *What are the major diseases caused by tobacco?*

There are many but major diseases are :

- (1) Chronic Bronchitis with Emphysema and Chronic Obstructive Lung Disease (COLD),
- (2) Cancer of Lung, Mouth, Throat, Cervix and Bladder,
- (3) Ischaemic Heart Disease (Heart attacks).

— In India cancer of Lung is 8.6 times more amongst smokers than in non-smokers. Heart diseases are twice as common, heart attacks thrice as common, and second heart attack 6 times more common in smokers than in non-smokers. Cancer of mouth, oesophagus and pharynx are 10 times more than in non-smokers, cancer of hard palate is 132 times more in females who smoke Chutta (reverse smoking).

— Bidi smoking carried a higher lung cancer risk than cigarette smoking owing to large amount of Tar.

Q. 23. *What side effects does tobacco have on medication?*

— Tobacco reduces the efficacy of a range of medicines; among them analgesics (pain killers), anti-coagulants, anti-asthmatic drugs, and drugs to treat angina pectoris (i.e. common heart condition).

Q. 24. *What are the added risks of Tobacco specific to a female smoker?*

— Tobacco increases the risk of cardio-vascular diseases of a woman taking oral contraceptives, heart attacks, strokes, blood clots in leg veins are 10 times more than non-smokers.

— The risk to the health of a female smoker are further increased if her blood pressure and cholestral levels are above normal.

— Menopause occurs from one to three years earlier.

Q. 25. *How long have men been smoking?*

In the industrialised world, the bad habit among men became wide spread at the time of World War-I of 1914-1918, peaking in the mid 1970s.

In the third world, cigarette smoking became predominant later—in the mid 1970s—and mainly among men. However, developing countries are now the biggest market for the tobacco industry.

Q. 26. *How long have women been smoking?*

— Since World War-II, 1939-45, but as a result of advertisements in the 1960s which, for instance, linked smoking to women's rights and proclaimed "You have come a long way baby", today women are lighting up more than men."

— From 1960 to 1980, the mortality rate for females from Lung Cancer doubled in 28 industrialised countries.

- In Scotland male death rates from Lung Cancer are the highest in the world—121 per 1 lakh population. Female death rate is 38 per 1 lakh and still rising. In Australia, female death rates from lung cancer from 8.9 in 1975 to 14 per lakh in 1982. In USA Lung Cancer has caught up with breast cancer as a leading cause of female neoplasm. Lung Cancer is projected to be No. 1 form of cancer for females in the United Kingdom by 2010.

Q. 27. *What are the risks for a pregnant smoker?*

- When a pregnant woman smokes, her unborn child does so too. She passes carbon monoxide and nicotine to the baby's blood stream, lessening its supply of oxygen and accelerating its heart beat.
- In addition her new born child is likely to be premature or underweight; and her toddler frequently ill. Still births among smoking pregnant women is 3 times more, and spontaneous abortion twice more than in non-smoker females.
- The risks are greatest for women in India because they are of poor health, low nutrition, anaemic and to have had many children.

Q. 28. *What is passive smoking?*

A non-smoker who is forced to breathe smoke-filled air, and who thus becomes paradoxically, a non-smoking smoker.

Q. 29. *How is passive smoking harmful to health of non-smokers?*

- Tobacco smoke contains chemical properties that irritate the eye, nose and throat of a non-smoker sharing an indoor space—an office, or a public place—with smokers. It is however, more than just a simple nuisance, but it is a health hazard.
- Non-smoking wives of husbands who smoke have shown a higher rate of Lung Cancer than women married to non-smokers.
- In the first decision of its kind, in 1985, a Swedish Court ruled that smoking by colleagues had been the "probable cause" of death from Lung Cancer of a non-smoking office worker, and was thus an occupational injury. The family received compensation.
- It has been calculated that each year passive smoking accounts for 4000 to 5000 deaths in USA, and 1000 deaths in U.K.

Q. 30. *Is it difficult to break the habits?*

- Yes, because tobacco is dependance-producing. The majority of those who quit do so called "cold turkey"—that is, making a

clean break, and, through determined will power, outlasting the withdrawal symptoms.

- It is being done also through cessation courses, through group therapy and counselling.
- The first step is a decision to quit—for the sake of the smoker's health and for the sake of the smoker's family, because smoking is slow motion suicide and unendurable to witness, or for social reasons.

THE NON-SMOKER'S COUNTER ATTACK

Q. 31. *What are consumption trends for tobacco world-wide?*

- In industrialised countries like USA and UK, it is slowing down by 1.1 per cent annually. In India, it is rising by 2.1 per cent annually.

Q. 32. *What is that?*

- In many industrial countries, smoking has become socially less acceptable as a result of public information and health education programmes undertaken not only by government but also by non-Government organisations and by business.
- That is not the case for India, because our country lacks funds and expertise to carry out education programmes, and because of industry's hard sell of tobacco, linking it to Western life styles much emulated in our country.

Q. 33. *Are there anti-tobacco initiatives that fall in the category of precedent setting?*

To cite a few noteworthy examples:

- Finland's law requiring that at least 0.5% of tobacco taxes be spent for health education and research.
- Hongkong's ban on the import and sales of smokeless tobacco, the first Asian Government to do so.
- Twenty countries throughout the world prohibiting all advertisements of cigarettes.
- Canadian dailies setting the example in the industrialised world by refusing tobacco advertising on grounds of public interest.

Q. 34. *Are there any estimates of the numbers quitting?*

- Yes, in Canada some 56 lakhs, in U.K. 1 crore and in USA 4 crores.

Q. 35. *What are public Health officials advocating?*

- That non smokers have a right to breathe smokeless air, most important in work places, but also in indoor public places, particularly where food is served.

- That the medical profession itself, especially Doctors and Nurses, as well s hospitals, set an example of non-tobacco use.
- That in countries where smokeless tobacco is not used, a "pre-emptive ban" be placed on promotion and sales, and where it is used, that it is subject to regulations similar to those applied to Cigarettes.
- That health education programmes to prevent addiction be aimed primarily at youth, and that cessation programmes be offered to smokers who wish to break the habit.
- That public health be put before the profits of tobacco enterprises, private or state-owned,
- That non-smoking be normal social behaviour and that as a consequence societies should aim to be smoke-free.

Q. 36. *What are the benefits of breaking the habit?*

- Good-bye to "dragon's breath", to smelly hair, clothes, curtains; to stains on teeth and fingers; to accidental house fires, or burns on table cloths, furniture, mattresses, rugs and sofas; to apologies for smoking in company—and to an expensive addiction.
- Hello to more money to spend on better, essential things, or to save; to fresher breath (Kiss a non-smoker, taste the difference, as health education posters says); to a wholesome feeling of well being—and to a better, healthier life style. □

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- * Proceedings of WHO
- * American Cancer Society
- * International Union Against Tobacco



WORLD MEDICAL ASSOCIATION STATEMENT ON HEALTH HAZARDS OF TOBACCO PRODUCTS

Adopted by the 40th World Medical Assembly, Vienna, Austria, September 1988

There is overwhelming and incontrovertible scientific evidence that the use of tobacco products is related to serious adverse health consequences in those who use such products. Furthermore, irritating and harmful substances from smoking tobacco may impose a health burden on non-smokers who are in proximity to smokers.

Assuming that action has not been taken, WMA urges the National Medical Associations and all physicians to take the following actions to help reduce the health hazards related to smoking and to other use of tobacco products:

1. Adopt a policy position opposing smoking and the use of tobacco products, and publicize the policy so adopted.
2. Prohibit smoking and the use of tobacco products at all meetings of the National Medical Association. For many years WMA has had a standing order (No. 24) that prohibits smoking in meeting rooms where WMA meetings are being conducted.
3. Develop, support and participate in programs to educate the profession and the public as to the health hazards of tobacco products. Educational programs directed specifically at children and young adults to avoid the use of tobacco products are particularly important. Programs for non-smokers and non-users of smokeless tobacco products aimed at avoidance are as necessary as education aimed at convincing smokers to cease the use of tobacco products.
4. Encourage individual physicians to be role models (by not using tobacco products) and spokesmen for the campaign to educate the public about the deleterious effects on health resulting from the use of tobacco products. Ask all hospitals and health facilities to prohibit smoking on their premises.
5. Advocate the enactment and enforcement of laws that:
 - (a) require warnings about health hazards to be printed on all packages in which tobacco products are sold and in all advertising and promotional materials for tobacco products.
 - (b) limit smoking in public buildings, commercial airlines, schools, hospitals, clinics, and other health facilities.
 - (c) impose limitations on advertising and sales promotion of tobacco products.
 - (d) regulate or prohibit the importation of tobacco products.
 - (e) prohibit the sales of cigarettes and other tobacco products to children and adolescents.
 - (f) prohibit smoking on all commercial airline flights within national borders and on all international commercial airline flights, and prohibit the sale of tax free tobacco products at airports.
 - (g) prohibit all governments subsidies for tobacco and tobacco products.
 - (h) provide for research into the prevalence of use of tobacco products and the effect of tobacco products on the health status of the population, and develop educational programs for the public about the health hazards of tobacco use.
 - (i) prohibit the promotion, distribution and sale of any new forms of tobacco products that are not currently available.
 - (j) increase taxation of tobacco products, using the increase revenues for health care measures.

HEALTH CARE PROMOTION TRUST (REGD.)

OBJECTIVES

- ★ To undertake projects, programmes and schemes relating to health education, specially the primary health care and to provide facilities for such primary health care in the country for various vulnerable groups and socio-economically weaker sections of Society.
- ★ To do all acts and deeds, to promote the concept of primary health care as a whole, i.e., on physical, mental, physiological and spiritual planes.
- ★ To found, establish, manage and take over institutions and societies engaged in promoting and propagating the concept of primary health care and for that purpose, to undertake projects, programmes and schemes involving general public and to train people as volunteers to propagate the knowledge connected with Primary Health Care among the various segments of society all over India.
- ★ To found, establish and maintain Libraries, Research Centres providing educative material on health education, nutrition, population limitation, potable water supply, environmental hygiene and control of communicable diseases and also to establish and maintain Health Institute/Organisations/Establishment for such purpose.
- ★ To pay stipend, scholarships, aids, such as rewards for outstanding performances and prizes to the deserving scholars, authors, volunteers and other persons connected with promotion and propagation of concept of Primary Health Care and who have been instrumental in creating awareness about the health as a whole.

(AN ACTIVITY OF HEALTH CARE PROMOTION TRUST (REGD.) NATIONAL INSTITUTE OF PRIMARY HEALTH CARE

OBJECTIVES

- ★ To identify core content of primary health care.
- ★ To assess the primary health care facilities available vis-a-vis the needs of the people.
- ★ To identify and assess the medical and health manpower requirement to meet the needs.
- ★ To identify the role of private sector in helping the National Primary Health Care programme implementation.
- ★ To plan training of requisite health personnel.
- ★ To prepare guidelines for obtaining/providing other resources to meet the needs.
- ★ To suggest Alternate Strategy for delivery of Primary Health Care.
- ★ To concentrate on the health and community problems of the economically poor, the women, the adolescents, the elderly, the infants, the drug addicts, the handicapped and other vulnerable groups of population.
- ★ To take such other measures that could help achieve Health For All by the year 2000 and beyond.